REMARKS

In the Office Action at Item 2, several of the claims were rejected under the second paragraph of 35 U.S.C. 112. Specifically, claim 41 was rejected for lack of antecedent basis for the terminology "the glass float ribbon" in line 4. Also, claim 63 was noted as being indefinite for the terminology "silicone oxide" which could be a typographical error. Also, claims 64 and 76 were noted as having the Greek letter delta instead of the symbol for Angstroms.

Claim 41 has been amended to delete the word "the" from the terminology "the float glass ribbon". Also, the proper spelling of "silicon oxide" has been amended into claim 63. Also, for claims 64 and 76, the symbol for Angstroms has replaced the symbol for delta.

Support for Claims 78 and 79 is found in the specification at the following locations: for Claim 78 at the same location as that for pending claim 44; and for Claim 79 at Table 1 for 648°C.

In section 7 of the Office Action, a double patenting rejection was made against claims 41-77 based on U.S. Patent 6,027,766 and separately against claims 41-44, 46-50, 52-60, 64, 66, 67, 76 and 77 based on U.S. Patent 6,413,581.

It is respectfully submitted that applicants can file a conditional terminal disclaimer in regards to claims 41-77 for U.S. Patent 6,027,766 and for claims 41-44, 46-50, 52-60, 64, 66, 67, 76 and 77 in regards to U.S. Patent 6,413,581 upon an indication of allowability of these claims or added claims. The captioned application and U.S. Patents 6,413,581 and 6,027,766 are commonly assigned.

In Item 10 through Item 17 of the Office Action, claims 41-77 were rejected by the combination of patent documents where the primary reference was U.S. Patent 4,123,244 (Leclercq et al.).

It is respectfully submitted that claims 41-77 and added claims 78 and 79 are unobvious and patentable over the

combination of references, U.S. Patent 4,123,244 (hereinafter referred to as '244) in view of Paz et al. (WO 97/07069 or PCT 97/07069) because the primary reference '244 is deficient in establishing any case of prima facie obviousness. With the dificiency in the primary reference the secondary reference can not overcome the deficiency. Also there is not even any motivation to combine the patent documents.

It is respectfully submitted that claims 41-77 are all directed to having a coating placed over the float glass where at least one coating is placed over the float glass by chemical vapor deposition ***in a tin bath*** during the glass manufacturing process. This is shown in the independent claims 41, 46, 52, 64 and 68 and carries over to their dependent claims as well. Also for Claim 76 and claims dependent therefrom for the sodium ion diffusion barrier coating at least that coating is applied by CVD over the glass on the tin bath.

It is respectfully submitted that the '244 patent never teaches or suggests placing a coating over float glass in a tin bath. The drawings indicate that the glass 1 is traversing over rollers 3 in Fig. 1 and in Fig. 3 the glass 19 goes over rollers 20. Also, it is noted in the '244 patent at column 5, lines 4-23, that:

> "Particular importance is attached to the performance of a process according to the invention for coating a ribbon of glass progressing from a float tank and in that field of application preference is given to processes in which the flow passage is located downstream of the exit end of the float tank and at a zone where the glass has a temperature in the range 100.degree. to 650.degree. C.
>
> The invention includes apparatus suitable for use in carrying out a coating process according to the invention as hereinbefore defined. Apparatus according to the invention comprises means for supporting a substrate, means for heating the substrate, a shroud mounted in a position such that it defines with the substrate face to be coated a shallow

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flow passage, feeding means for discharging gaseous medium into such flow passage at one end thereof, and exhaust ducting into which the opposite end of said shallow flow passage leads for exhausting residual medium away from such passage.

Apparatus according to the invention as above defined may embody any one or more features enabling any one or more of the various optional process features hereinbefore described to be employed. Reference is made in particular to the placing of the shroud to define with the substrate, when it is supported in the apparatus, a flow passage the height of which (measured normally to the substrate face to be coated) is at no point in excess of 40 mm; to the use of a shroud which forms a tapering flow passage and to the use of a shroud which is not more than 2.0 meters and not less than 10 cm in length. As will also be apparent from the description of the various preferred process features, the substrate supporting means is preferably arranged for displacing a substrate in the same direction as the direction in which gas flows along shallow flow passage."

From the aforementioned quotation it is clear that the '244 patent involes coating glass ***after it leaves the molten tin bath***. This is clear from the elaborate apparatus with the shroud that is used in coating the glass outside of the bath where rollers support the glass substrate.

In the Office Action it was noted that the '244 patent or Leclercq et al. does not teach all of applicants' claimed limitations of float glass forming, post processing steps, the sodium ion barrier, the precise self-cleaning activity or testing methods, nor the thickness and temperature specifications of some of the claims of applicants. It was noted in the Office Action that regarding the lack of teaching by the '244 patent that one skilled in the art at the time the invention was made would find it obvious to expect to perform batch melting, pulling, cutting, etc. steps in the float glass manufacturing process of Leclercq et al. because float glass

manufacturing is very well known in the glass making arts and the additional steps are anticipated by the float glass manufacturing. If the Examiner is relying on personal knowledge or knowledge of another U.S. Patent and Trademark Office for the particular steps of float glass manufacturing for coating glass while it is supported on a molten tin bath, the Examiner is kindly requested to make that information of record by an affidavit in accordance with 37 CFR 1.104(d)(2).

Also, it is noted that the '244 patent only mentions the term "crystal" once at column 4, line 18. It is respectfully submitted that the '244 patent doesn't state what type of crystals for what type of materials. Different materials have different crystalline structures and applicants are claiming the presence of at least the crystalline phase developed from chemical vapor deposition over the float glass while the glass in on the tin bath to give the photocatalytically activatable self-cleaning coating.

Also the '244 patent and the Paz patent document has no motivation for their combination. The '244 patent is directed to a process for forming a metal or metal compound coating on a face of a glass substrate by contacting such face while it is at elevated temperature with a gaseous medium containing a substance in gaseous phase, which substance undergoes chemical reaction or decomposition to form said metal or metal compound on said face. The '244 patent also relates to an apparatus for use in carrying out such a process. Processes of the '244 patent are employed for forming coatings which modify the apparent color of the glass and/or which have some other required properties in respect of incident radiation, e.g. an infrared-reflecting property. This does not suggest in any way any photocatalytic activity as in the Paz patent document.

Accordingly in view of the above amendments in regards to 35 U.S.C. 112 for clarification purposes rather than any limiting of the scope of the claims, and the foregoing remarks in regards to the cited patents, it is respectfully submitted that applicants' pending claims and

added claims are in condition for allowance. Reconsideration and allowance of the captioned patent application with the pending claims are respectfully requested.

Attached hereto is a marked-up version of the amendments to the claims made by the instant amendment. The attached page is captioned **"VERSION WITH MARKINGS TO SHOW CHANGES MADE"**.

Respectfully submitted,

KENNETH J. STACHEL
Registration No. 27,722
Attorney of Record

Kenneth J. Stachel
(412) 434-3186

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS

Please amend claims 41, 63, 64 and 76 and add claims 78 and 79 as indicated below.

41. (Amended) A method for producing a layer of titanium dioxide in at least the crystalline phase, wherein said layer of titanium dioxide is a photocatalytically-activatable self-cleaning coating over [the] glass float ribbon, and further wherein said coating is capable of having a photocatalytically-activated self-cleaning reaction rate of at least about 2×10^{-3} cm^{-1} min^{-1} upon exposure to ultraviolet radiation, said method comprising the steps of:

positioning a chemical vapor deposition coating apparatus over a tin bath containing a glass ribbon having a temperature of at least about 400° C (752° F);

directing a titanium dioxide precursor through said chemical vapor deposition apparatus over a surface of the glass ribbon heated to said temperature; and

thereafter annealing the glass ribbon,

whereby said layer of titanium dioxide is produced.

63. (Amended) A method according to claim 52, the improvement further comprising: depositing over a surface of said float ribbon as the float ribbon is formed in said tin bath a sodium ion diffusion barrier layer comprising [silicone] silicon oxide and having a thickness of at least about 100 Å over a surface of said float ribbon and depositing in said tin bath said photocatalytically-activatable self-cleaning coating over said sodium ion diffusion barrier layer.

64. (Amended) A method comprising the steps of:

providing by a float manufacturing process a glass article having at least one surface;

depositing in a tin bath during said float manufacturing process a photocatalytically-activatable self-cleaning coating

over the surface of the article by chemical vapor deposition so that the coating has titanium dioxide in at least the crystalline phase and has a thickness ranging from at least 100 [Δ]Å to less than 1 micron.

76. (Amended) A method comprising the steps of:

providing by a float glass manufacturing process a glass article having at least one surface;

depositing a sodium ion diffusion barrier coating over the surface of the article by chemical vapor deposition in a tin bath during the glass manufacturing process; and

depositing at a temperature in the range of from about 538° to below about 800° C (1000° to 1472° F) a photocatalytically-activatable self-cleaning coating over the barrier coating so that the photocatalytically-activatable self-cleaning coating comprises titanium dioxide in at least the crystalline phase and has a thickness ranging from at least about 100 [Δ]Å to less than 1 micron.

78. A method according to claim 76, further comprising the step of exposing the photocatalytically-activatable self-cleaning coating to ultraviolet radiation whereby a photocatalytically-activated self-cleaning coating is produced.

79. A method according to claim 76, wherein the glass ribbon is at a temperature of 648°C to 800°C.

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